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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/518,550	01/03/2005	Riccardo Po	263356US0XPCT	7565

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EXAMINER	
TESKIN, FRED M	

ART UNIT	PAPER NUMBER
1796	

NOTIFICATION DATE	DELIVERY MODE
11/23/2007	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/518,550	<b>Applicant(s)</b> PO ET AL.	
	<b>Examiner</b> Fred M. Teskin	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 19 September 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 13-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13-18 is/are allowed.
- 6) ☒ Claim(s) 1 and 5-9 is/are rejected.
- 7) ☒ Claim(s) 2-4, 10 and 11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Amendments presented in the reply of September 19, 2007 are acknowledged.

Claims 1-11 and 13-18 are currently pending and under examination.

The prior art rejection based on EP 0869137 has been mooted by the cancellation of claim 12.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1 and 5-9 stand rejected under 35 U.S.C. 103(a) as being unpatentable over CA 2422058 (Simon).

Simon teaches a process for synthesizing a block copolymer in which styrene is polymerized at a temperature of 120°C, in the presence of a stable free nitroxyl radical and a free radical initiator (corresponding to applicants' compound (G)), followed by dissolution in the polymerized styrene product of n-butylacrylate to synthesize a poly(n-butylacrylate) block, at a temperature higher than 120°C and in the presence of the same radical generator and stable nitroxyl radical (Examples B17/B5).

Simon differs from the claimed subject matter in that the recited features of polymerizing in the presence of a compound having the formula (I), feeding acrylonitrile to the polymerization mixture of step (a), and excluding a precipitation and/or recovery step of a first polymeric block between steps (a) and (b) is not disclosed in a single embodiment.

In regard to claim formula (I), it is noted that in the nitroxyl radical compound used to prepare the styrene block in Example B5, the -OR group (corresponding to  $X_2$  in formula (I)) is a monovalent carboxyl radical instead of a hydrogen atom of a hydroxyl, as claimed. Nevertheless, Simon demonstrates the utility of a stable free nitroxyl radical with a hydroxyl group as  $X_2$  in polymerizing styrene at the same temperature (120°C) and using the same type of radical generator compound (Example B7), and identifies hydrogen and a monovalent radical of an aliphatic carboxylic acid as alternative choices for the R variable of the nitroxyl radical compound (page 6, bridging paragraph). Example B7 further gives the amount (0.5187 g) and molecular structure of the nitroxyl-radical used in conjunction with VA086 initiator. According to page 20, penultimate paragraph, 0.3322 g VA086 is the initiator for examples 1-10 (which includes Example B7) and the molecular structure of VA086 is shown on page 13. Thus, although not explicitly stated, the molar ratio of nitroxyl-radical compound to initiator in B7 is calculated to be 2.05, which corresponds to an I/G value lower than 4, per claim 1.

In regard to the use of acrylonitrile in claimed step (b), Simon explicitly teaches that block copolymers of styrene, (meth)acrylates and/or acrylonitrile are useful in plastics, elastomers and adhesives (page 17, third paragraph), thereby suggesting the alternativeness between acrylates like n-butylacrylate and acrylonitrile in forming a block copolymer with styrene.

Therefore, it would have been obvious to an ordinarily skilled practitioner at the time of invention to modify the block copolymer synthesis of Simon by polymerizing

styrene in the presence of a nitroxyl radical compound within applicants' formula (I) (e.g., reference compound 103) at a molar ratio lower than 4 (relative to the radical generator) and feeding acrylonitrile to the polymerization mixture in place of an acrylate, in the expectation of obtaining adequate results. It would further have been obvious to one of ordinary skill to perform that synthesis without an intermediate precipitation/recovery step, since Simon (I) illustrates the synthesis of polystyrene-block-n-butylacrylate *via* a "one pot" procedure wherein the initially formed polystyrene is not recovered or precipitated prior to adding n-butylacrylate (Example B20) and (II) generically describes the preparation of multi-block copolymers without reference to any recovery or precipitating step between the first and second polymerization steps. In this latter regard, Simon specifically states: "in one embodiment of this invention, once the first monomer is consumed in the initial polymerizing step a second monomer can then be added to form a second block on the growing polymer chain in a second polymerization step" (page 19, penultimate paragraph). Where its associated function of isolating an intermediate polymeric block is not desired, motivation exists to eliminate the recovery/precipitating step between the first and second polymerization steps in Simon, and thereby produce the present invention.

Applicants' arguments filed September 19, 2007 have been fully considered but are not persuasive of error in the repeated rejection.

As to the argument that Simon fails to disclose or suggest a process without recovery or isolation of the first block polymer: examiner disagrees and relies on the

reasoning detailed in the repeated rejection *supra* as basis for finding that Simon at least suggests preparing a multi-block copolymer without a step of recovery/precipitation of the first polymeric block.

It is further argued, based on a proposed comparison of Inventive Examples 1-6 with Comparative Examples 1 and 2, that applicants' process provides superior yield, Mw control and polydispersity control over processes that include such a phase (i.e. Simon). Unfortunately, the inventive and comparative examples are not side-by-side comparative tests; i.e., they differ in several respects apart from the feature corresponding to the point of novelty (omission of the intermediate precipitation/recovery step). In particular, the inventive examples utilized an I/G molar ratio of 1.13 along with sequential charging of styrene followed by benzoyl peroxide and TEMPO; whereas in the comparative examples, the I/G was 1.34 and styrene, benzoyl peroxide and TEMPO were initially charged together (*cf.*, Example 1 with Comparative Examples 1 and 2 of the Specification). Thus, the inventive and comparative procedures do not bear such correspondence that the alleged improvements can be traced with reasonable certainty to the novel feature. Applicants are reminded that any showing of unexpected results must be conducted on a side-by-side experimentation and under identical conditions except for the novel feature(s) of the invention. *In re Chapman*, 148 USPQ 711.

It is further urged that applicants' elimination of the precipitation/recovery step is non-obvious on the basis of eliminating a step or element while retaining the step or element's function. However, the only apparent function of this step is to isolate the

first-step polymeric block. It is not seen how that function is retained in the claimed process in the absence of a precipitation/recovery step. To the contrary, it appears that the function (isolation of first polymeric block) has been eliminated along with the manipulative step. Omission of a step (or element) and its function is *prima facie* obvious where the function is not desired; see MPEP 2144.04 (Part II A).

Claims 2-4, 10 and 11 stand objected to as being dependent on a rejected base claim but would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claim.

New claims 13-18 are allowable on the present record.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner F. M. Teskin whose telephone number is (571) 272-1116. The examiner can normally be reached on Monday through Thursday from 7:00 AM - 4:30 PM, and can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The appropriate fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

FMTeskin/11-12-07

  
FRED TESKIN  
PRIMARY EXAMINER  
1796